[preprint]aastex psfig

Hα Hβ Brγ L$_\odot$ M$_\odot$ Z$_\odot$ M$_\odot$ yr^{-1} km s^{-1} $\dot{M}$ $T_{\rm eff}$ C iv λ1550 Si iv λ1400 N v λ1240 He ii λ4686 [0pt]0pt0.4cm

To appear in The Astrophysical Journal

document Multiwavelength Study of the Starburst Galaxy NGC 7714. II. The Balance between Young, Intermediate Age and Old Stars

Ariane Lançon Obs. de Strasbourg (UMR 7550), 11 rue de l'Université, 67000 Strasbourg, France lancon@astro.u-strasbg.fr

Jeffrey D. GoldaderUniv. of Pennsylvania, Dept. of Phys. & Astron., 209 S. 33rd St., Philadelphia, PA 19104 jdgoldad@dept.physics.upenn.edu

Claus Leitherer Space Telescope Science Institute1, 3700 San Martin Drive, Baltimore, MD 21218 leitherer@stsci.edu

Rosa M. González Delgado Instituto de Astrofísica de Andalucía (CSIC), Apdo. 3004, 18080 Granada, Spain rosa@iaa.es

1Operated by AURA, Inc., under NASA contract NAS5-26555

abstract We combine existing multiwavelength data (including an HST/GHRS UV spectrum and a ground based optical spectrum) with unpublished HST/WFPC2 images, near-IR photometry and K band spectroscopy. We use these data to constrain the young, the intermediate age and the old stellar populations in the central regions of the starburst galaxy NGC 7714.

In a previous paper (González Delgado et al. 1999), the stellar features in the HST/GHRS ultraviolet (UV) spectrum and the optical emission lines were used to identify a $\sim 5\,Myr old, very little reddened stellar population as the ma$
$IR are used to partly break the strong degeneracy between the effects of ageing and those of the inhomogeneous dust distribution on$
$-optical--IR colors. Consistency with far-IR, X-ray and radio data is also addressed. The successful models have essential f$
The mass of young and intermediate age stars thus formed equals at least $10\,\%$ of the mass locked in pre$-$
$existing stars of the underlying spiral galaxy nucleus, and fractions around 25\,\% are favored. The spectrophotometric star forma$
$110\,Myr elapsed since closest contact with the neighboring NGC\,7715, according to the dynamical models of Smith \& Wallin (1992$

NGC 7714 owes its brightness in the UV to a few low extinction lines of sight towards young stars. Our results based on the integ
$330\,pc are supported by high resolution images of this area. The different extinction values obtained when different spectral indic$
$IR continuum image looks smoothest, as a consequence of lower sensitivity to extinction and of a larger contribution of old stars.$

We compare the nuclear properties of NGC 7714 with results from studies in larger apertures. We emphasize that the global p
$typical" starburst, M\,82.$